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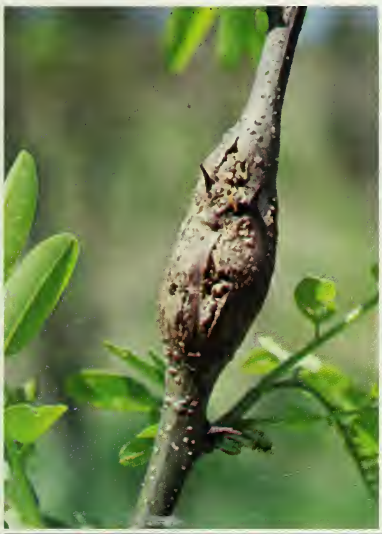
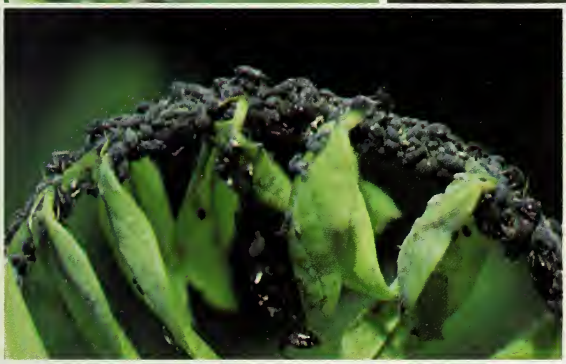
A Guide to Common Insects, Diseases and Other Problems of Black Locust





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A Guide to Common Insects, Diseases, and Other Problems of Black Locust

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INTRODUCTION

Black locust (*Robinia pseudoacacia* L.) plays an important and sometimes indispensable role in certain facets of forest management, even though it is low in value compared to most other commercial hardwood species.

Reclamation foresters prize black locust because it thrives in direct sunlight and helps improve poor soils through nitrogen fixation, and because much of its natural range (figure 1) largely coincides with highest concentrations of eastern surface-minable coal. Its rapid growth and prolific sprouting make it a favorite species for prairie state shelterbelt construction. Farmers find that black locust is highly resistant to most forms of rot and is, therefore, a good choice for fencepost use. The clean burning and high heat production properties of locust wood make it very desirable as fuel firewood.

This publication will inform foresters and others about the common pests of black locust and appropriate control methods.

Figure 1. — Natural range of black locust.

LOCUST BORER

Megacyllene robiniae (Forster)

Importance. — The locust borer is a serious pest of black locust. Larvae often riddle the stems, sometimes causing them to appear "honeycombed" in cross section (figure 2). This makes the trees vulnerable to wind breakage. Both old and young trees are attacked, but trees growing on poor sites are particularly susceptible. The growth of infested trees is often severely retarded.

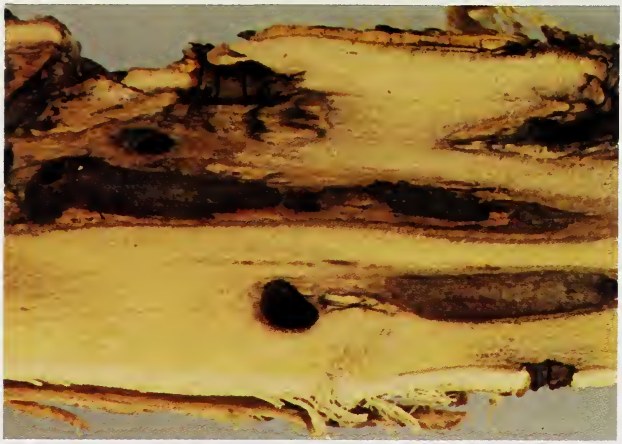

Figure 2.—Internal defect caused by mining of locust borer larvae.

Identifying the Insect. — Adult beetles are about ¾-inch (1.91-cm) long and jet black, with bright yellow lines forming a "W" design on the back of the wing covers. Legs are reddish-brown. Adults are often found feeding and mating on goldenrod during the last days of summer and early fall (figure 3). The larvae are legless, white, and about 1-inch (2.54-cm) long when full grown.

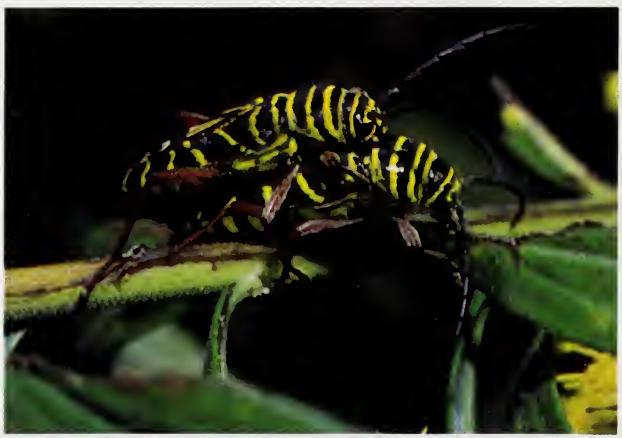

Figure 3. — Locust borers mating on goldenrod.

Identifying the Damage. — Early spring damage is detected by observing small wet spots on the bark (figure 4).

Figure 4.—Small, wet spot on bark indicating locust borer larval activity in the early spring.

Later, fine boring dust accumulates at the base of the tree. Young trees that have been repeatedly attacked appear bushy from constant growth retardation. Heavily infested stands often have many windbroken trees (figure 5).

Figure 5.—Windbroken tree, severely riddled by locust borers.

Biology.—In late summer or early fall, eggs are laid in rough bark crevices—often near wounds. Upon hatching, the young larvae bore into the inner bark and form a hibernating cell for overwintering (figure 6). In the spring, they resume their mining—this time into the sapwood.

Figure 6.—Larval hibernating cell of locust borer.

New adults emerge in the late summer through their original attack points.

Control.—Interplanting locust with other tree species helps discourage the buildup of borers, as does removing heavily infested brood trees. General maintenance for vigor also discourages attacks. Fertilizing and watering during dry periods can help prevent damage to shade trees. If attacks are recent enough, larvae can be killed by piercing their bodies with a flexible wire inserted at the attack point.

When practical, insecticides can also be used. Apply them directly to the bark until runoff.

LOCUST TWIG BORER

Ecdytolopha insiticiana (Zeller)

Importance. — Heavy infestations of the locust twig borer can cause substantial growth loss in young trees. Among seedlings, mortality can be high.

Identifying the Insect. — Full grown caterpillars are ½- to ¾-inch (1.27- to 1.91-cm) long and reddish to yellow, with a dark line on their backs. Moth wingspread ranges from ¾- to 1-inch (1.91- to 2.54 cm). Forewings are dark gray–brown, with light pink patches on the outer sections.

Identifying the Damage. — Locust twig borer larvae cause the formation of irregular, elongated swellings in new growth (figures 7 and 8). If currently infested, moist boring dust exudes from the attack point. Often the infested area cracks, and the twig bends (figure 9).

Figure 7.—Gall caused by locust twig borer.

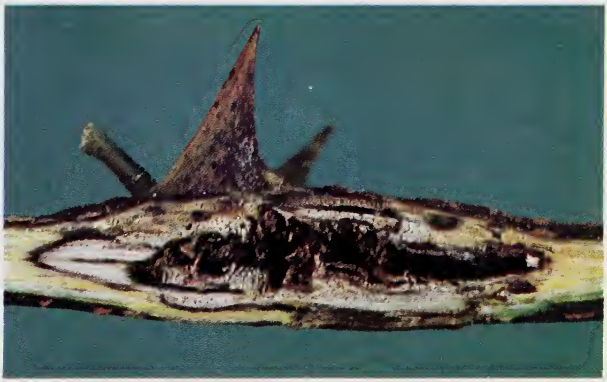

Figure 8.—Internal damage within dissected gall caused by locust twig borer.

Figure 9.—Bent twig, caused by locust twig borer.

Biology. — Adults emerge twice during the year—from mid-spring to early summer and again from late summer to mid-fall. Full-grown larvae overwinter in cocoons in the soil, pupate in the spring, emerge as adults, and then mate.

Control. — No effective controls are known for this pest. Maintenance of healthy trees and planting on suitable sites may discourage attacks or encourage tolerance of attacks.

LOCUST LEAF MINER

Odontota dorsalis (Thunberg)

Importance. — Damage by the locust leaf miner is usually spectacular but causes limited impact. However, in combination with other stress conditions such as drought, infestations can contribute to growth loss and even mortality. The heaviest impact is in esthetic and recreation areas, where outbreaks can cause entire hillsides of locust to turn brown.

Identifying the Insect. — Beetles are about ¼-inch (.64-cm) long and flat, with black heads and mostly orange thoraxes and wing covers. However, the inner edge of each wing cover is black (figure 10). Full-grown larvae are yellowish, flat, and slightly larger than adults.

Figure 10.—Adult locust leaf miner and characteristic adult feeding damage.

Identifying the Damage. — Adults skeletonize the lower leaf surface and eat holes in the leaves. Larvae cause more serious damage by constructing blisterlike mines in the leaves (figure 11), which eventually turn brown.

Biology. — After overwintering in bark cracks and under the litter of the forest floor, beetles emerge in the spring and begin feeding. Soon they deposit eggs. Upon hatching, the larvae feed together in common blisterlike mines. Later they construct new mines where they live individually. In midsummer, new adults emerge, mate, and produce a second generation.

Control. — Control is generally unnecessary. In high-value situations, fertilization and watering during stress periods may enable trees to better tolerate infestation. Under some conditions, the use of insecticides may also be practical.

Figure 11. — Blisterlike mine caused by feeding of locust leaf miner .

RIMOSUS HEART ROT

(Caused by *Fomes rimosus)*

Importance. — This is the most important disease of black locust. It has made thousands of acres of trees unusable for any commercial products. Diseased trees normally are not killed, but continue to occupy valuable growing space.

Identifying the Damage. — The heartwood becomes brown, lightweight, and crumbly (figure 12). This advanced decay is sometimes surrounded by a zone of light-colored wood adjacent to healthy wood. The decay may be noticeable at wounds or branch stubs.

Identifying the Fungus. — The conk (figure 13), which is attached directly to the tree, is hard, woody, deep rich brown, and perennial. The top of the conk has furrows with shallow splits, while the underside is yellowish-brown and composed of a series of small holes. The inside of the conk is woody and also yellowish-brown.

Biology. — The fungus enters the tree through a wound or old branch stub and causes heart rot. Locust borer injury provides a major avenue for the fungus to enter the tree. Conks are then produced at wounds or old branch stubs, spores from the conks are windblown to new wounds or branch stubs, and the cycle is complete.

Control. — The best way to control this disease is through prevention. Infection occurs through older branches, tunnels made by the locust borer, and wounding (e.g., machine wounds or fire). Close spacing will encourage natural pruning and reduce the number of older branches. Controls for the locust borer are explained in a previous section. Any practice that could cause wounding (such as the use of machinery) should be discouraged.

Reduction of fires is important to prevent basal wounds, which can lead to decay. Trees with conks of the fungus have extensive decay and should be considered for removal. This would release healthy trees and reduce the safety hazard of weakened trees falling in public use areas.

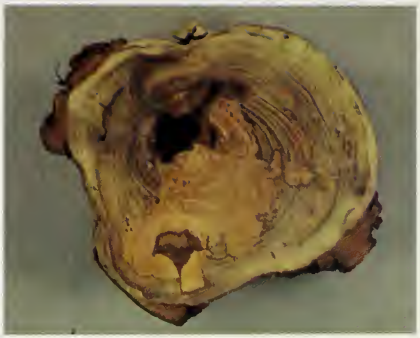

Figure 12.—Disk, taken from a heart rot-infected tree, showing characteristic brown, crumbly heartwood. Also note the locust borer mines, typically associated with heart rot.

Figure 13.—"Conk" or sporophore of Rimosus Heart Rot, Fomes rimosus.

MINOR PESTS

Insects:

PEST	SYMPTOMS	DAMAGE	CONTROL
Aphids (various species) (figure 14)	Curled and distorted leaflets.	Slight.	If control is necessary, spray with insecticides.
Bagworms (figure 15)	Defoliation in midsummer. Baglike structures about 1 inch (2.54 cm) in length attached to tree.	Some growth loss. May predispose locust to attack by other pests.	Handpick bags during winter and burn them or drop them in kerosene. Insecticides are effective if applied early in the season, while larvae are still young.
Defoliators (various species)	Partial to complete leaf removal. Foliage remaining on the tree is often tattered and chewed.	Some growth loss. May predispose locust to attack by other pests.	If control is necessary, spray with insecticides. If possible, fertilize and water during drought to minimize impact.
Webworms	Partially defoliated branches engulfed in white webbing.	Little damage, as defoliation occurs late in summer when most growth has been completed.	If control is necessary, spray with chemical or bacterial insecticides. If accessible, webbing may be hand-pruned and burned to destroy larvae.

Diseases:

Branch Cankers (figure 16)	Discolored, slightly sunken, oval to elongated cankers on small branches. Branch beyond canker may die.	Dieback and limb breakage.	Cankers can be minimized by preventing wounds, maintaining tree vigor, and pruning out cankered and dead limbs.
Brooming Virus Disease (figure 17)	Vein clearing, reduced leaflet size, tapered leaf base, proliferation of buds and branches, and broom production (usually at the base of the tree).	Growth loss and distortion. May cause mortality.	Remove and destroy affected trees, since this disease can be spread by root grafts or leaf insects.
Heart Rots (various decay organisms)	Decay of the heartwood. Wood becomes lightweight and loses strength.	Extensive loss of structural soundness, in many cases, rendering the tree unusable for forest products.	The same as for Rimosis Heart Rot.

PEST	SYMPTOMS	DAMAGE	CONTROL
Leaf Diseases (caused by a variety of fungi)	Spots and blotches on leaves, ranging from small to large and round to irregular. May cause premature loss of foliage.	None if infection is light. Growth loss and stress if infection is heavy.	In most cases complete defoliation does not occur, or occurs late in the year. Control is normally unnecessary. When control is needed, apply fungicides prior to leaf symptoms.
Leaf Rusts (various species)	Reddish-brown or black powdery pustules on leaves.	None if infection is light. Growth loss if infection is heavy.	No control needed.
Sooty Mold	Black sticky substance on foliage, concentrated on stems of leaflets. Aphids usually present.	Little damage. Some growth loss may result if enough leaf surface is affected.	This fungus is always associated with insects, especially aphids. Any practice that will control the insect will control the fungus.
Other:			
Chlorosis	Yellowish foliage. Entire tree often involved.	Some growth loss. May predispose tree to attack by other pests.	This is normally a nutrient deficiency. Soil samples should be taken to find out which element is lacking (e.g., iron). Apply the proper fertilizer.
Drought	Foliage droops and wilts.	Growth loss and some mortality possible. May predispose locust to other problems, especially leaf miner.	When practical, provide enough water to get the tree through the stress period.
Frost Cracks (figure 18)	Vertical splits in the bark and sapwood, normally on the south side of the tree.	May cause tree failure and also provide for entrance of decay organisms.	Plant trees close enough to provide shade for neighboring trees in the winter.
Herbicides	Cupped and curled leaflets (similar to aphid damage). Older foliage may have dead areas.	Minor to extensive mortality, depending on quantity and type of herbicide.	Minimize the use of herbicides. Apply only those recommended for use around black locust.
Mechanical Damage (figure 19)	Scrapes, tears, cuts, splits, etc., caused by mechanical means.	May cause tree failure and also provide for entrance of decay organisms.	Minimize the practices which cause the damage.

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(Photograph by Ken Knox)

Figures 14-19.—(14) Aphid colony on black locust foliage; (15) Bags of two bagworms on black locust twig; (16) Branch canker; (17) Brooms, caused by virus, on root collar of black locust; (18) Frost crack at base of black locust; (19) Mechanical damage at base of small black locust.

PESTICIDE PRECAUTIONARY STATEMENT

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key—out of the reach of children and animals — and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

Note: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the Federal Environmental Protection Agency, consult your county agricultural agent or State extension specialist to be sure the intended use is still registered.

Use Pesticides Safely

FOLLOW THE LABEL

U.S. DEPARTMENT OF AGRICULTURE